

Ahmedin Lekpek
State University of Novi Pazar
Department of Economic Sciences

ARE CRYPTOCURRENCIES A SUSTAINABLE ALTERNATIVE TO TRADITIONAL CURRENCIES?

Da li su kriptovalute održiva alternativa tradicionalnim
valutama?

Abstract

The great economic crisis has shown that the global financial system primarily protects those who are „too big to fail“. In order to provide the common man at least a partial liberation from the hegemony of this bureaucratized and undemocratic system, Bitcoin was created, the first cryptocurrency that functions in a decentralized monetary system based on the blockchain. The emergence of cryptocurrencies, which are beyond the control of the traditional political and economic structures, has raised hopes that the world monetary system can be democratized and freed from the influence of inefficient regulatory institutions. This paper analyzes how realistic the scenario is that in the foreseeable future cryptocurrencies will prevail over traditional currencies, starting from the basic characteristics of cryptocurrencies, regulation of their accounting and tax status, mutual influence of monetary policy and cryptocurrency system, potential benefits that cryptocurrencies can offer to developing countries, as well as a summary of the advantages and disadvantages of cryptocurrencies and recommendations for their improvement.

Keywords: *cryptocurrencies, blockchain, bitcoin, traditional currencies, digital banking*

Sažetak

Velika ekonomska kriza je pokazala da globalni finansijski sistem prevashodno štiti one koji su „preveliki da bi propali“. Da bi se običnom čoveku omogućilo bar delimično oslobađanje od hegemonije ovog birokratizovanog i nedemokratskog sistema, kreiran je Bitcoin, prva kriptovaluta, koji funkcioniše u decentralizovanom monetarnom sistemu, baziranom na blockchainu. Pojava kriptovaluta koje su van kontrole tradicionalnih političko-ekonomskih struktura, pobudilo je nadu da se svetski monetarni sistem može demokratizovati i osloboditi od uticaja neefikasnih regulatornih institucija. U ovom radu analiziraćemo koliko je realan scenario da u doglednoj budućnosti kriptovalute prevladaju u odnosu na tradicionalne valute, polazeći od osnovnih karakteristika kriptovaluta, regulisanja njihovog računovodstvenog i poreskog statusa, međusobnog uticaja monetarne politike i kriptovalutnog sistema, potencijalnih koristi koje kriptovalute mogu ponuditi zemljama u razvoju, kao i sumarnog pregleda prednosti i nedostataka kriptovaluta i preporuka za njihovo unapređenje.

Ključne reči: *kriptovalute, blokčejn, bitcoin, tradicionalne valute, digitalno bankarstvo*

Introduction

Throughout history, the entities that possessed exceptional political, social and economic power have had the right to issue money and manage the monetary system. Individuals who ruled certain territories proved their sovereignty, among other things, by minting their own money and imposing its use as a basic means of payment [22]. Although there are opinions that the first forms of the means of payment were determined and accepted spontaneously, in accordance with the existing needs and business conditions [36, p. 143], with the appearance of the first states and coins, this process ceased to be spontaneous and becomes strictly politically controlled. As a rule, the holder of control over the issue and cash flows had the greatest influence in every society, and in order to acquire and maintain such an important position, it was inevitable to engage in conflicts, political violence and bloodshed. One of the most important achievements of parliamentary democracy is the creation of an institutional environment in which the transition of political power and control over monetary flows is peaceful [23]. Therefore, due to the democratization of society individuals had been deprived of their monopoly over the management of the monetary system and monetary authority had been dispersed to the wider society. Thanks to the right to vote and participate in the election of the parliament members, who then directly control the monetary authorities, the citizens were given the opportunity to, although indirectly, influence monetary policy.

However, the global economic crisis that occurred in 2008 revealed the true state of affairs and called into question the democracy of the monetary policy process, even in the bastions of democracy such as the United States and the European Union. All the weaknesses of the financial and monetary system in countries of liberal economic provenance were shown, as well as the fact that most of the activities carried out during the crisis management process and its consequences were largely in favor of financial and political oligarchy, not the average citizen. The absence of democracy in the creation and implementation of monetary policy, the essential impotence of the citizens and the excessive discretion of

the governing structures in making key decisions have become apparent.

It was this situation that motivated the creation of bitcoin, the first currency based on the blockchain system [41]. They are not created and controlled by the monetary authorities of any country [20, p. 3], but exclusively by participants in the blockchain, the so-called miners. Miners join the system and contribute to it by investing electricity and powerful software that solves complex algorithms [35, p. 29]. Within the system, they verify the realized transactions, without the possibility of changing and misusing the data in the records (ledgers) which are a confirmation of the existence of the transaction [3, p. 76]. In order to motivate individuals to participate in the system and take on the role of miners, the system provides them with a financial incentive in the form of commissions on realized transactions and bitcoins that they receive in the process of mining [20, p. 5]. Over time, according to the criteria by which miners' performance is evaluated and rewarded, two systems have emerged: proof-of-work (PoW), where miners are rewarded according to the computer power and electricity consumed, and on which bitcoin is based, and proof-of-stake (PoS), where miners are rewarded according to the number of coins they have [15, p. 38; 29, p. 93; 20, p. 6].

A decade after the creation of the first cryptocurrency, it is clear that this is not a one-time miracle, but an important phenomenon that must not be ignored. This is supported by the fact that today there are over 3000 cryptocurrencies in circulation, whose total market capitalization reached the value of 223.5 billion dollars, with a noticeable dominance of bitcoin (market share 66.5%), and daily turnover close to 56 billion dollars [10]. Cryptocurrencies are characterized by the fact that they are digital, privately issued, but not by public institutions, and enable decentralization of transaction execution [9, p. 3-4]. These characteristics of cryptocurrencies have made them attractive to a large number of citizens around the world who are left out of the existing banking system or the existing system does not suit them. These include those who [8, p. 1067]: do not have a current account and payment cards, live under totalitarian regimes that can easily take away their savings, live in countries with high

inflation and unstable currencies, want to develop and try technological innovations, and/or are involved in illegal business. The exceptional potential of cryptocurrencies is also recognized by countries which want to take advantage of the blockchain system and create their own cryptocurrencies¹. For example, Sweden initiated the procedure of introducing its cryptocurrency e-Krona, Venezuela started the introduction of a cryptocurrency called Petro, which is supported by the natural resources that this country has at its disposal [this endeavor proved unsuccessful, in more detail 49, p. 146], while Japan planned to introduce the cryptocurrency J-coin during the Olympics in Tokyo in 2020 [45, p. 51-52]. Russia also considers following this practice. Namely, there is a plan to introduce CryptoRuble in order to neutralize the negative consequences of international sanctions and the dominance of the US dollar as the world's reserve currency [49, p. 146]. On the other hand, Argentina, as a country with long history of financial crises and economic instability, sees cryptocurrencies as a chance to stabilize its monetary flows and „democratize money“ [38, p. 13].

The increasing importance of cryptocurrencies and the great expectations that a major part of the public has about them, opens numerous issues that should be addressed by the professional and regulatory public, such as legal and financial risks and security of participants in blockchain transactions and cryptocurrency users [5, p. 70]. Starting from that, in this paper we will analyze the process of regulating the use of cryptocurrencies, their accounting and tax categorization, conducting monetary policy in the conditions of cryptocurrencies, as well as the possibility of complete suppression of traditional currencies by cryptocurrencies in the foreseeable future.

Challenges of regulating the use of cryptocurrencies

Cryptocurrencies were developed as an alternative to conventional currencies in order to offer to the world a decentralized and democratic monetary system that would

be controlled by the participants themselves through predefined protocols. In the cryptocurrency system, there is no regulatory entity that mediates transactions, monitors the system and prevents illegal activities [53]. Consequently, cryptocurrencies are often perceived as „anarchistic“, which can be neutralized only by creating a crypto-banking system managed by a centralized administration [20, p. 14]. Regulatory issues related to the use of cryptocurrencies must be resolved in a systematic way, because otherwise the cryptocurrency system can very easily fail [51, p. 10]. The practice of legal regulation of cryptocurrencies varies in different countries, from a complete ban, through strict control of cryptocurrency dealers, to encouraging their use [25, p. 173]. Some of the key regulatory issues that need to be addressed are [48, p. 4]: presentation of cryptocurrency transactions in official financial statements, taxation of cryptocurrency transactions, and regulation of cryptocurrency dealer business.

The first dilemma to be addressed concerns the accounting treatment of cryptocurrencies. Current international accounting standards do not recognize cryptocurrencies, which is why it is necessary to supplement existing standards or, using an analogy, find an accounting category that is most similar to cryptocurrencies [46, p. 27]. Cryptocurrencies cannot be considered cash² because they are not sufficiently represented in purchase and sale transactions, nor can they be deposited in current accounts of banks; they cannot be considered intangible assets because they possess certain characteristics of financial instruments; considering that they offer their owner the possibility of making a capital gain, they can be classified in the category of investments [46, p. 27-28].

In the literature, we also find suggestions for posting cryptocurrency transactions. After excavation, cryptocurrencies can, in the amount of costs incurred in the process of mining, be recorded as assets in the balance sheet and unrealized gain in comprehensive income, while after their sale, revenues and expenses will be recorded within the income statement or net profit be separated

1 Government-issued cryptocurrencies do not satisfy the principle of decentralization, so they can be considered digitized government-issued currencies, rather than cryptocurrencies in the true sense of the word [31, 399].

2 Although at first glance they seem very similar to e-cash, cryptocurrencies still cannot be classified in this category due to the decentralization of the cryptocurrency system, a specific method of mining and anonymity [50, p. 5].

from the income statement and directly included in the liabilities of the balance sheet [46, p. 29-30]. Collection of receivables in cryptocurrencies is recorded by converting the received amount into the official currency at the exchange rate valid on the day of payment [50, p. 4].

The implementation of blockchain technology, on which cryptocurrencies are based, can also contribute to improving the efficiency of the accounting system. Potential benefits are primarily reflected in easier monitoring and verification of transactions, automated audit, simpler determination of property ownership, introduction of smart contracts and more transparent registers of all forms of assets [4, cited in 29, p. 96]. The application of smart contracts can lead to a reduction in the burden on the judicial system and a decrease in the transaction costs of concluding business contracts, due to the reduced need for third party mediation [14, p. 110]. However, it should not be forgotten that, unlike financial reporting, the blockchain is not only used to record transactions, but also within the blockchain is their realization [14, p. 109]. Also, given the extensive electricity and computer energy that needs to be consumed as a prerequisite for verifying transactions [20, p. 4], existing software solutions for tracking accounting transactions currently seem to be a better solution than blockchain [14, p. 109]. Efforts to categorize cryptocurrencies as accurately as possible are also aimed at regulating the taxation of cryptocurrency transactions. Considering that cryptocurrencies cannot be treated as traditional currencies, but rather as a form of property, this should be the starting point for their taxation issue [20, p. 10]. An important step in regulating the issue of taxation of the cryptocurrencies transactions was made by the European Court of Justice, which in 2015 exempted bitcoin transactions from value-added tax [16, p. 5, 7]. This step should encourage jurisdictions in all countries whose citizens use cryptocurrencies to regulate these transactions. Ignoring them would have extremely severe consequences in the form of creating a gray zone that provides perfect conditions for accounting and business fraud [46, p. 33].

The third regulatory challenge concerns the creation and implementation of monetary policy in the conditions of the existence of cryptocurrencies. The protocol according

to which cryptocurrencies function prevents the conduct of active crypto-monetary policy because their offer is fixed [2, p. 8]. In addition, there is no mechanism for withdrawing cryptocurrencies from the market [27, p. 20], which central banks often use in conventional currencies in order to maintain their value. Also, cryptocurrencies are globally present and during their creation and use the needs of specific countries were not taken into account, nor the standards for creating an optimal currency zone, which further complicates the situation [9, p. 7]. These problems could be mitigated by changes in the algorithm by which cryptocurrencies operate, which would make the supply of cryptocurrencies flexible and in line with economic trends [42, p. 78; 9, p. 8]. Otherwise, in the period of economic growth, a fixed supply of cryptocurrencies would inevitably burden the economy with the problem of deflation [42, p. 78].

Although cryptocurrencies are not created by central banks, nor are they under their jurisdiction, this fact does not release central banks from the obligation to monitor movements in the cryptocurrency market and take appropriate measures accordingly. There are a number of valid reasons for this. First, the increased use of cryptocurrencies reduces the demand for conventional currencies, leading to two problems for monetary authorities [9, p. 9]: 1. control over monetary flows is reduced, which makes it difficult to conduct monetary policy efficiently, and 2. seigniorage revenue and, consequently, budget revenues are reduced, forcing governments to compensate for lost revenues by increasing taxes, which inevitably causes negative consequences for the economy. One of the consequences of reduced control over the money supply is the reduced possibility of influencing the movement of interest rates, which are now affected by both the supply of conventional ones and the supply of cryptocurrencies [45, p. 53]. Second, cryptocurrencies have far greater speculative potential than conventional currencies, so the bursting of the cryptocurrency bubble and the emergence of a crisis that can easily spill over into the conventional financial, but also into the real sector, are quite real options [9, p. 9].

It is evident that no security mechanism has been incorporated into the cryptocurrency system, such as deposit insurance or the existence of a credible lender of

last resort, which makes it very unstable and difficult to maintain in the long run [9, p. 10-11]. In addition, central banks and their management are responsible for their actions, while the cryptocurrency system does not have such an entity. This system is based on an algorithm that in case of system failure cannot be held accountable and which, no matter how complex and advanced it may seem, still does not meet the requirements of the modern financial system [9, p. 11]. However, despite the fact that central banks are not directly involved in the cryptocurrency system, their activities have a tremendous impact on the cryptocurrency market. Research has shown that changes in exchange rates, interest rates and quantitative easing have had a strong impact on the volatility of yields on cryptocurrencies, which shows that the cryptocurrency market is not immune to the activities of monetary authorities [13, p. 70-71]. It has been shown that in the period of increase of the reference interest rates by central banks, capital moves from the stock market and demand and yield on cryptocurrencies grow, while in the period of conducting expansive monetary policy the opposite trend occurs [43, p. 337]. The interconnection and conditionality of the cryptocurrency market and the traditional financial market is obvious and especially pronounced in countries with a greater presence and use of cryptocurrencies [33]. However, despite that, there is no consensus among the professional and regulatory public about the question of whether to include cryptocurrencies in the existing monetary system in order to facilitate their control or keep them out of the system [45, p. 34]. Regardless of the position of the regulatory authority, it is realistic to assume that the representation of cryptocurrencies will increase over time. Therefore, it is crucial to monetary authorities, with the support of national governments, get involved in the process of cryptocurrency development as soon as possible, so as not to become incapable of controlling the effects of cryptocurrency business and cryptocurrency market functioning [45, p. 53]. Otherwise, state and monetary authorities risk losing monetary control, the ability to stabilize macroeconomic trends and prevent sharp declines in economic activity in the foreseeable future [6, p. 19-21]. Finally, the possibility that the cryptocurrency system will discipline central banks in order to become

more committed to achieving the goal of price stability is not negligible, especially in the case of central banks that have a long history of failure in this field [9, p. 12].

The anonymity and decentralization of transactions with cryptocurrencies have opened up new opportunities for the free and efficient transfer of money and the realization of business transactions. Unfortunately, the monitoring difficulty of cryptocurrency transactions has been misused for money laundering and performing other illegal transactions [8, p. 1066; 54, p. 94]. Thanks to cryptocurrencies, Silk Road, an online drug market where thousands of dealers supplied millions of their clients, functioned very successfully [16, p. 4]. All this shows us that cryptocurrencies have an exceptional destabilizing potential, both for the economy and for society as a whole, so their perception as an experiment of marginal importance is a luxury that regulatory authorities cannot afford.

Possibilities of complete suppression of traditional currencies by cryptocurrencies

The great economic crises showed that the global financial system has an oligopolistic structure, with the dominant role of corporate financial giants being too-big-to-fail and triggering systemic banking crises through their speculative activities, which was one of the main motives for creating cryptocurrencies that work independently of the given system [51, p. 19]. The attractiveness of cryptocurrencies lies in the new opportunities and freedom that their users gain. They provide the possibility of anonymous realization of transactions, as well as use of money that is not managed by traditional political structures and which is globally usable and easily transferable, without endless legal procedures and obstacles [9, p. 4]. Thanks to advanced algorithms, the transfer of cryptocurrencies can be far cheaper, faster and more secure than the traditional currencies transfer, and, in addition, their owners are protected from arbitrariness or inefficient economic policy of the government of their country [8, p. 1065-1066]. The absence of a highly bureaucratic structure in the cryptocurrency system and intermediaries in transactions enables the reduction of transaction costs and the realization of lower value transactions that are

not economically justified in the conventional monetary system [20, p. 2]. These benefits are especially important for mercants, who can make cheap, fast and secure money transfers around the world, without fear of being victims of fraud [54, p. 94; 2, p. 2]. This system also allows workers in foreign countries to transfer money to their families without complicated procedures and high commissions, as well as farmers in poor countries to receive money more easily after selling their products to foreign buyers [48, p. 5]. Additionally, in developing countries, the majority of the population does not have access to banking services, but has mobile phones³, through which they can access the blockchain system and use the benefits of cryptocurrency transactions [16, p. 5]. Thus, cryptocurrencies can be a solution for a large number of people living in unstable and corrupt countries⁴ [1, p. 359]. These countries are often burdened by high inflation, which is in favor of the use of cryptocurrencies whose supply is mostly fixed, and thus are protected from inflation [16, p. 2; 54, p. 94], with the exception of cryptocurrencies based on the PoS system, which is not characterized by a fixed offer [20, p. 6].

Are these facts are strong enough arguments to declare cryptocurrencies legitimate means of payment and settlement, or even abandon the conventional monetary system and move to a cryptocurrency system? Friedrich Hayek believed that in an ideal currency system, currencies must be stable, contribute to the stability of economic movements, and there must be no state monopoly over the creation and management of currencies [in more detail 19, 106-116]. In the case of cryptocurrencies, the last condition is met. However, in order to cryptocurrencies be a viable alternative to traditional currencies, it is necessary that they be characterized by stable value, general acceptance and liquidity [24, p. 573]. Stable value and general acceptance, in the form of a wide range of users,

are closely linked and mutually conditioned. In order to a certain currency be generally accepted, it is necessary for its value to be stable for a longer period of time, which is again conditioned by the existence of a sufficient number of users, i.e. demand that is in line with supply [9, p. 5]. The value of cryptocurrencies is very unstable⁵, which is why there is no firm trust in them [16, p. 6] and, therefore, they are not used for everyday payments [24, p. 574]. For that reason, mercants do not keep them in their possession for a long time, but immediately convert them into stable traditional currencies [2, p. 2; 24, p. 576]. Their more active use would force mercants to constantly adjust prices due to frequent exchange rate changes, which shows that cryptocurrencies at this time can be as problematic to use as unstable currencies of developing countries [2, p. 2, 4]. The problem of variability in the value of cryptocurrencies cannot be significantly alleviated by creating a diversified portfolio of cryptocurrencies because the movements of returns on different cryptocurrencies are largely aligned, with the pronounced impact of Bitcoin returns on the return of other cryptocurrencies [21]. The pronounced variability in the value of cryptocurrencies can not only deter potential users from entering the cryptocurrency market, but also motivate existing ones to redirect their investments to traditional currencies, which would lead to their appreciation [47, p. 12].

The main reason for the more stable value and wider circle of users of traditional currencies is a system that stands behind them, which has been created over the centuries and it is based on strong, interconnected public and private institutions and states that provide them with legal basis and protection, which is not easy to overthrow [48, p. 3]. In the cryptocurrency system, there is no regulatory institution that would focus its activities on maintaining the stability of their value and amortize large value fluctuations that occur during a significant change in demand [2, p. 1]. An advanced algorithm and protocols are not enough to solve this problem, but the functioning

3 It should not be forgotten that even before the advent of cryptocurrencies, there were developed alternative, non-banking channels for money transfers and the provision of other financial services, which were also available to the population in developing countries. Therefore, although cryptocurrencies are a significant technological and financial innovation, they cannot be considered a pioneering endeavor in solving the problem of the availability of financial services to the population in the mentioned countries.

4 For this claim to be realized in practice, it is necessary to meet a number of conditions, which will be discussed in more detail later in the article.

5 Research [40] showed that the returns volatility of bitcoin (0.0461), measured with standard deviation, was ten times higher than the returns volatility of Euro (0.0046), Canadian Dollar (0.0046) and Swiss Franc (0.0044), eight times higher than the returns volatility of Australian Dollar (0.0056) and the Japanese Yen (0.0058), and more than seven times higher than the returns volatility of British Pound (0.0062).

of the cryptocurrency system is obviously necessary to regulate by defining its legal status, which would increase the legitimacy of cryptocurrencies, provide additional protection to their users and solve their taxation problem [20, p. 9-10]. Thus, the decentralized, debureaucratized and depoliticized system on which cryptocurrencies are based and because of which the public accepted them as hope for liberation from the constraints of the corrupt political-economic system, has become the main source of problems for cryptocurrencies themselves.

In addition, we should not forget that most people still do not know the system by which cryptocurrencies function [54, p. 94; 20, p. 12]. It is true that the level of knowledge of most people about the conventional monetary system is also low, but they are aware that the state is behind this system with its financial and political strength, which reduces the need for a high level of awareness that should precede the use of traditional currencies. On the other hand, there are many obscure and fraudulent Internet services that serve to manipulate insufficiently informed individuals and involve them in „pump-and-dump and Ponzi schemes“ [44, 113243], which causes growing aversion to cryptocurrencies. Therefore, cryptocurrencies are perceived more as a speculative investment than as means of payment [20, p. 11; 54, p. 94]. Researches show that up to 90% of bitcoin transactions are speculative in nature [24, p. 575]. Also, they point to the high information efficiency of the cryptocurrency market, which immediately reacts to new information [30, p. 2287-2288].

According to researches, the value of cryptocurrencies in the initial stages of their development is dominated by speculative activities, while later, when the market stabilizes and matures, economic factors, such as the cost of their creation, take over the domination [32, p. 58]. These costs are mostly variable, such as the costs of electrical and computer power [27, p. 25]. Therefore, it is easy to conclude that cryptocurrencies have no intrinsic value [30, p. 2287]. Since they are not based on precious metals as traditional currencies used to be, nor is their value guaranteed by monetary authorities, which is the modern practice with traditional currencies, it is clear why the use of cryptocurrencies is still limited and why they

are mostly used by speculators [9, p. 6]. For everyone else, doing business with cryptocurrencies is a real adventure. The conclusion of any contract involving long-term annuity payments or income expressed in cryptocurrencies, such as taking a long-term loan or buying a financial instrument that generates income expressed in cryptocurrencies, should be followed by complicated hedging operations to mitigate currency risk [2, p. 6].

The fact that the value of cryptocurrencies is unstable, due to insufficient trust of the general public and, therefore, a low level of acceptance, as well as strong speculative activity [51, p. 10] is particularly unfavorable for developing countries, which have seen cryptocurrencies as a way out of the current unenviable situation. This is not the only reason why cryptocurrencies are not currently a sustainable solution to the monetary problems of the mentioned countries. Namely, the efficient functioning of the blockchain requires a quality electricity and telecommunications infrastructure, which is not available to a large part of the population of developing countries, precisely those who would need cryptocurrencies the most [48, p. 7]. Second, even if the value of cryptocurrencies is stable and the ability to access the blockchain system is better, this „escape to the Internet“ can be detrimental in the long run because it can serve as an excuse for the developing countries governments not to undertake the necessary radical reforms of their banking and economic systems [48, p. 8]. At the moment, cryptocurrencies cannot meet expectations and be a „safe haven“ for the average resident of these countries from the adverse effects of geopolitical risks to which they are constantly exposed [11, 6]. In the current conditions, the real benefit of cryptocurrency in these countries would not have those who need it the most, but the wealthiest segment of the population, which has quality education, access to blockchain and enough money which needs to be extracted from the country [48, p. 8].

Given the numerous shortcomings of cryptocurrencies, at this point it is illusory to expect that in the foreseeable future bitcoin will succeed in overthrowing the US dollar from the throne of the world reserve currency. This can be rather expected from some other traditional currency, such as Chinese yuan [51, p. 33]. This role can hardly be taken over

by cryptocurrencies, even if the mentioned shortcomings are corrected. In order for a certain currency to acquire the status of the world reserve currency, it is necessary for its issuer to possess enormous political and economic power on the global level. All attempts and proposals to make the world's reserve currency supranational, which would prevent the monetary hegemony of any country, such as Keynes' Bancor [see 52], have ended in failure. The euro is one of the few relatively successful supranational monetary projects. However, it should not be forgotten that control over European monetary policy is not evenly dispersed to all EU members, but that Germany and its Bundesbank have a dominant role [see 52], which confirms the previously stated thesis.

Based on all the above-mentioned, it can be concluded that cryptocurrencies have not yet met key expectations. Instead to be P2P cash, whose creation is cheap and efficient, cryptocurrencies have become speculative assets created in an expensive and complex process [18, 177, 191]. Among their users, a minority are proponents of the existence of currencies exempt from state control, and majority are profit-seekers [34, 138], even classic gamblers⁶. In addition, the increasingly expensive process of the cryptocurrencies creating can lead to the hegemony of several mining firms and the imposition of high fees for cryptocurrency transactions [34, 141, 142]. The result of this process would be the centralization of the cryptocurrency system, thus losing the key difference compared to the conventional currency system.

However, these problems currently burden cryptocurrencies, and the low probability of suppressing traditional currencies [54, p. 94] must not be a reason for their rejection. They have tremendous potential to improve the quality of financial services and enable the safe and inexpensive transfer of money worldwide, unencumbered by inefficient administration and procedures. For the mentioned potential to be fully used, it is necessary to resolve several important issues. The first is the issue of control and regulation of cryptocurrency systems. Complete reliance on self-regulation has repeatedly proved unsuccessful in practice [17, 168]. On the other hand, applying the conventional

approach to the regulation of cryptocurrency systems cannot bring valid results. Therefore, instead of direct and centralized regulation of cryptocurrency creators, it is more effective to apply decentralized regulation of cryptocurrency users, following their money transfers related to the purchase and sale of cryptocurrencies [39, 290]. However, government regulation must not hinder the creation of a conducive institutional environment for cryptocurrency ecosystems [24, 586]. It would be optimal to develop regulations in parallel with the cryptocurrency systems development [39, 291]. Also, given the global character of cryptocurrencies, regulatory standards should be defined at the international level [17, 170].

The second issue concerns the creation and conduct of crypto-monetary policy. Research shows that this important issue does not attract adequate attention from the academic public. Namely, of the total number of relevant surveys dealing with cryptocurrencies (18,000), only 1.57% (282) include the topic of monetary systems [12, 101]. In the mentioned research, the cryptocurrencies supply and demand management is mentioned as an important issue. Some authors believe that the supply of cryptocurrencies should be infinite and state that miners reward and mining cost are key factors that can be used to influence the miners behavior, the mining process and the stabilization of the market price of cryptocurrencies [in more detail 27]. On the other hand, in the conditions of fixed supply of cryptocurrencies, as a solution for more efficient management of the cryptocurrencies supply and demand is „the incorporation of ‘crypto-banks’ that would accept cryptocurrency deposits and issue ‘convertible crypto-banknotes’ through fractional reserves“ [7, 21]. These, however, are still only theoretical solutions. In practice, cryptocurrencies are still burdened with numerous shortcomings. As long as these shortcomings are not remedied, cryptocurrencies will be usable only in economies burdened by high inflation, while in other cases the joint use of traditional and cryptocurrencies will have a detrimental effect on economic trends [28, p. 35]. In the literature, we find the characteristics that cryptocurrencies must have in order to their use be successful [26, p. 10-11]: unlimited supply, price adjusted to the marginal costs of their production, permanent assessment of marginal costs

⁶ Researches show that cryptocurrency trading is strongly associated with gambling addiction [37, 139].

by competitors and abandonment of cryptocurrencies with above-average production costs by miners, as well as the possibility of achieving an acceptable profit rate from arbitrage based differences on spot and forward cryptocurrency prices.

Conclusion

During the decade of existence, cryptocurrencies have gone through a challenging development path from obscure attraction, exclusively understandable to IT experts and attractive to notorious gamblers, to a potential alternative to traditional currencies, strictly controlled by political and economic elites. A cryptocurrency system based on the peer-to-peer principle is perceived as a debureaucratized, democratic monetary system, freed from the yoke imposed by corrupted authorities that govern the global financial system. Cryptocurrencies have provided hope that money transfers, after removing administrative barriers, slowing-down procedures and third-party interference, will become far faster, cheaper and more secure. This would give a great contribution to international trade and an opportunity for the population of developing countries to receive money (foreign currency remittances), manage their savings and save it from inflation and expropriation by local repressive authorities.

However, in order to cryptocurrencies fully meet such high expectations, it is necessary to resolve a number of issues that accompany their implementation. The accounting and tax status of cryptocurrencies should be defined first. The first steps in this area have already been taken by classifying cryptocurrencies as investments and exempting cryptocurrency transactions from VAT. Also, the cryptocurrency system is of interest to regulatory authorities because it provides favorable conditions for performing numerous illegal transactions, which remain out of sight of law enforcers.

The complete independence of the cryptocurrency system from the conventional financial flows and the moves of the monetary authorities, who watch over these flows, is a concept that can only have a foundation in theory. Practice has shown a strong interdependence and connection between the traditional and crypto-monetary

systems. Monetary authorities must be aware that the cryptocurrency system has a huge potential to cause devastating financial crises, due to the lack of stabilizing mechanisms and regulatory authorities that should prevent or mitigate the effects of the crisis. In addition, the growing use of cryptocurrencies reduces the scope of monetary authorities' control over financial and economic flows, weakens the effects of applied monetary policy measures and the possibility of stabilizing economic developments. Therefore, it is necessary to include the cryptocurrency system in the conventional monetary system.

The pronounced volatility of cryptocurrency values makes it impossible to use them for everyday payments, borrowings or investments. Also, due to this shortcoming, cryptocurrencies cannot be a life-saving solution to the problem of unstable currencies and high inflation in developing countries, nor a valid competitor to the dollar in the fight for the place of the world's reserve currency. Decentralization and, according to economic conservatives, anarchy of the cryptocurrency system are the reasons why it was considered attractive and democratic. However, these are also increasingly emphasized as its main shortcomings and obstacles to cryptocurrencies stabilization and strengthening. Therefore, the creators of these systems must partially abandon the proclaimed ideals and subject the system to a process of conventional control and regulation. Obviously, it is a bitter pill that must be taken in order to keep the concept of cryptocurrency alive in practice and gain a wide user base. The popularization of cryptocurrencies and, consequently, the stabilization of their value will be influenced by the improvement of cryptocurrencies themselves, through the improvement of protocols, flexibility of supply, reduction of costs of their creation and more efficient authentication and realization of cryptocurrency transactions.

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Ahmedin Lekpek

is Assistant Professor of Finance and Banking at the Department of Economics Sciences at the State University of Novi Pazar, Republic of Serbia. He received his PhD in 2013 from the Faculty of Economics, University of Niš. His research interests include Islamic banking, conventional banking and corporate finance. He has published numerous papers in international and national journals, proceedings of international and national scientific conferences and thematic collection of papers.